

What is claimed is:

1 A method of screening for a gene affecting cardiac function after or during hypoxia or anoxia, comprising the steps of:

- 5 a exposing an adult *Drosophila* to conditions able to induce cardiac hypoxia or anoxia;
- b imaging the heart of said *Drosophila*;
- c measuring the movements of the heart in the image; and
- d analyzing the measurements of said movements; and
- 10 e identifying a gene affecting the cardiac function of said *Drosophila*.

2 The method of claim 1, further comprising exposing said *Drosophila* to change in temperature.

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3 The method of claim 1, wherein said gene affects an age-related change in said cardiac function.

4 The method of claim 1, wherein said *Drosophila* is a *Drosophila melanogaster*.

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5 The method of claim 1, wherein said imaging said heart comprises positioning said *Drosophila* under a microscope so that the light beam of said microscope is generally perpendicular to the frontal plane of said *Drosophila* and is directed on the heart of said *Drosophila*.

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6 The method of claim 5, wherein at least one contrast enhancement means is combined with said microscope to improve said image of said heart.

7 The method of claim 5, wherein said microscope is a fluorescence microscope and wherein said *Drosophila* expresses a fluorescent protein in said heart able to be detected by said fluorescent microscope.

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8 The method of claim 7, wherein said fluorescent protein is fluorescent green protein.

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- 9        The method of claim 1, wherein said movements are the movements of the walls  
of said heart.
- 10       The method of claim 1, wherein said analyzing said measurements corresponds to  
5        determining the heart rate.
- 11       The method of claim 1, wherein said measuring said movement is obtained using  
movement detection software.
- 10    12       The method of claim 1, wherein said analyzing said measurements comprises  
comparing said measurements to a control set of data.
- 13       The method of claim 1, wherein said gene has a mutation.
- 15    14       The method of claim 13, wherein said mutation causes a change in expression of  
said gene.
- 15       The method of claim 14, wherein said change in expression of said gene causes an  
age-related change in said cardiac function.
- 20    16       The method of claim 13, wherein said mutation causes an age-related change in  
cardiac function.
- 17       A method of screening for agents affecting cardiac function after or during  
25       hypoxia or anoxia, comprising the steps of:  
a        exposing an adult *Drosophila* to conditions able to induce cardiac hypoxia  
or anoxia;  
b        exposing said *Drosophila* to an agent;  
c        imaging the heart of said *Drosophila*;  
30       d        measuring the movements of said heart in said image;  
e        analyzing the measurements of said movements; and  
f        identifying an effect of said agent on the cardiac function of said  
*Drosophila* by comparing said analysis to a control.
- 35    18       The method of claim 17, further comprising exposing said *Drosophila* to change  
in temperature.

- 19      The method of claim 17, wherein the effect of said agent on age-related changes  
in the cardiac function is determined.
- 5      20      The method of claim 17, wherein said measurements are compared to a control set  
of data.
- 21      The method of claim 17, wherein the movements are movements of the walls of  
said heart.
- 10      22      The method of claim 17, wherein said analyzing comprises determining the heart  
rate of said *Drosophila*.
- 23      The method of claim 17, wherein said measuring is obtained using movement  
15      detection software.
- 24      The method of claim 17, wherein said *Drosophila* is a *Drosophila melanogaster*.